

October 8, 2012

Ms. Patricia Coppolino
Vermont Department of Environmental Conservation
Waste Management Division
103 South Main Street/West Building
Waterbury, Vermont 05671

Re: April 2012 Groundwater Sampling
Former Jard Company Site
Bennington, Vermont
SMS #VTD048141741
JCO Project #: 3-2218-5

Dear Ms. Coppolino:

This letter provides a summary of site investigation activities performed by The Johnson Company at the Former Jard Company Site in Bennington, Vermont (the Site) as specified by the approved Scope of Work dated April 10, 2012. These activities included an inspection of existing monitoring wells and piezometers, measurement of water levels, and collection of groundwater samples. Details of the work performed and a summary of the results are provided below and in the attached tables and figures.

SUMMARY OF WORK PERFORMED

An inspection was performed on April 18, 2012 to check the condition of all Site monitoring wells and piezometers, many of which had been destroyed during flooding from Tropical Storm Irene in August 2011. Of the 25 monitoring wells and 8 piezometers that were in place during sampling in 2010, 17 monitoring wells and 3 piezometers remained intact. Nearly all piezometers and monitoring wells located along the Roaring Branch were destroyed, including piezometers PZ-01 to PZ-06, monitoring wells EPA-4 to EPA-8, and MW-7. Monitoring wells EPA-2 and EPA-10 appeared to have been buried during repair of the levee along the southern Site boundary. Remaining wells appeared undamaged, except MW-9, from which the road box had become loose. The well cap of EPA-3 was replaced. Locations of all existing and former Site wells are shown on Figure 2.

The depth to water was measured in all intact monitoring wells and piezometers using an electronic water level meter. Monitoring wells MW-3 and MW-3D were checked for the presence of non-aqueous phase liquid (NAPL) with an oil/water interface probe.

The PVC well casing of monitoring well EPA-3 was observed to be above the top of the steel well guard. The top-of-casing elevation was checked relative to monitoring well MW-3D with a level. The calculated elevation was less than 0.1 foot different from that reported by Guntlow and Associates in 2010; it appears that the displacement of the casing occurred prior to the 2010 survey.

Samples were collected from 16 groundwater monitoring wells and 3 piezometers on April 18-19, 2012. Monitoring well EPA-9 was dry and could not be sampled. In addition, groundwater samples were collected from two formerly used private wells located within the basements of the residences at 403 and 406 Park Street



SDMS Doc ID 564865

(the (b) (6) residences, respectively.) The owner of the (b) (6) residence, which also contains a formerly used well, did not return calls seeking permission to sample this well.

With the exception of MW-3, a peristaltic pump was used to purge water from the monitoring wells, with the intake positioned at the approximate midpoint of the saturated well screen. At 5-minute intervals, measurements were made of water temperature, pH, oxidation-reduction potential (ORP), specific conductance, and turbidity. Samples were collected after stabilized parameters were observed over three or more consecutive readings. Piezometers were purged dry, and a sample was collected of the recharge. Field duplicates were collected from two monitoring wells and one piezometer. Purge water was placed in a 55-gallon drum for off-site disposal.

An interface probe detected dense non-aqueous phase liquid (DNAPL) in MW-3 at 11.97 feet below top-of-casing. A disposable bailer was lowered to the bottom of the well, and approximately 0.6 feet of light brown DNAPL was recovered. A sample of the DNAPL was collected with the bailer; groundwater in the well was not sampled. No DNAPL was detected in MW-3D.

Samples were analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082 at Eastern Analytical, Inc. of Concord, New Hampshire.

RESULTS

Table 1 presents depth-to-water measurements and calculated groundwater elevations. Figure 1 presents interpreted water table potentiometric contours based on calculated elevations. Laboratory results are provided in Table 2 and on Figure 2.

The hydraulic gradient at the Site is to the northwest, with an average magnitude of approximately 0.016 ft/ft. Consistent with observations in 2010, surface water levels and piezometer water levels indicated upward vertical gradients at the Park Street ditch near PZ-14 and at the Duck Pond near PZ-13, demonstrating discharge of groundwater to surface water at these locations. A downward vertical gradient indicative of groundwater recharge was noted at PZ-12, in the unnamed Furnace Brook tributary.

The Johnson Company is not aware of any hydraulic conductivity testing performed at the Site. Given the course sand, gravel, and boulders observed during drilling in 2010, literature values of hydraulic conductivity may range from approximately 10^{-2} to 10 centimeters per second. Using a hydraulic gradient of 0.016 and this range of conductivity values, groundwater velocities would be calculated to be on the order of 0.5 to 500 feet per day.

The area of groundwater containing detectable concentrations of PCBs was similar to that reported in 2010, extending approximately 1,200 feet from an apparent source area near MW-3 to the (b) (6) well, PZ-13, and MW-13 downgradient. Although PCB concentrations are near or below reporting limits in the most downgradient wells, the downgradient boundary of the detectable plume is not known.

PCBs were reported at levels below the Vermont Groundwater Enforcement Standards (VGES) at PZ-13 and MW-13, two downgradient sample locations where they had not previously been detected. No PCBs were detected in MW-1, in which PCBs were reported at 0.7 µg/L in 2010.

Downgradient of the Site, PCB concentrations in groundwater were generally comparable to those reported in 2010. Concentration changes between 2010 and 2012 were greater on-site, but did not exhibit a discernable pattern; the concentration at MW-3D increased from 110 to 310 µg/L between 2010 and 2012, whereas the

concentration in MW-6D declined from 25 to 5.1 µg/L over the same period. Concentration differences may be the result of seasonal variation, changes in conditions after Tropical Storm Irene, or laboratory difficulties identifying and quantifying Aroclors in weathered samples. The DNAPL sample from MW-3 was reported to contain 37% PCBs (370,000,000 µg/kg). The sample collected from this location in 2010, in which PCBs were reported at 14,000 µg/L, was collected from the groundwater in the well, rather than the DNAPL.

The reported concentration of PCBs in MW-12, located at the Plasan Facility, decreased from 40 µg/L in 2010 to 8 µg/L. The source of PCBs in this well is not known but may be different than the other wells, given the low or non-detect results in MW-1 and the apparent cross-gradient location of MW-12 from MW-3. If additional assessment of this area is desired, more piezometers could be installed to the north and northwest of the Plasan Facility to better define the groundwater table elevation in this area.

SUMMARY

The Johnson Company measured water levels and collected samples from 16 monitoring wells, 3 piezometers, and 2 private wells in the vicinity of the Former Jard Company Site in Bennington, VT. Eight monitoring wells and five piezometers near the Roaring Branch that had been in place during sampling in 2010 were destroyed.

The areal extent of detectable PCB concentrations in groundwater was similar to that reported in 2010, extending approximately 1,200 feet downgradient of MW-3. PCB concentrations in groundwater increased in two on-site wells (MW-3D and MW-6D) and decreased in two others (MW-6 and MW-1). A NAPL sample collected from MW-3 contained 37% PCBs, confirming the presence of a source in this area.

Thank you for this opportunity to be of service to VT DEC. Please feel free to contact me if you have any questions or concerns pertaining to the work described in this letter.

Sincerely,
THE JOHNSON COMPANY, INC.

By: _____
Daniel Baston, P.E.
Project Manager
E-mail: dpb@jcomail.com

Attachments

K:\3-2218-3\2012 Sampling\Letter Report 100812.doc

ATTACHMENTS

Location	Top of Casing Elevation (ft.) (1)	7/29/2010		8/6/2010		8/30/2010		4/18/2012	
		DTW (ft.)	Elevation (ft.)	DTW (ft.)	Elevation (ft.)	DTW (ft.)	Elevation (ft.)	DTW (ft.)	Elevation (ft.)
EPA-2	684.40	Dry	< 679.70	Dry	< 679.70	Dry	< 679.70	<i>destroyed</i>	
EPA-3	687.11	9.56	677.55	9.11	678.00	10.06	677.05	10.98	676.13
EPA-4	685.88	8.80	677.08	8.44	677.44	9.24	676.64	<i>destroyed</i>	
EPA-5	686.01	<i>inaccessible</i>		<i>inaccessible</i>		<i>destroyed</i>		<i>destroyed</i>	
EPA-6	683.72	21.74	<i>not available (3)</i>	21.31	<i>not available (3)</i>	9.36	674.36	<i>destroyed</i>	
EPA-7	683.15	<i>inaccessible</i>		<i>inaccessible</i>		10.87	672.28	<i>destroyed</i>	
EPA-8	678.50	<i>inaccessible</i>		<i>inaccessible</i>		8.05	670.45	<i>destroyed</i>	
EPA-9	683.91	Dry	< 672.39	10.97	672.94	Dry	< 672.39	Dry	< 672.39
EPA-10	684.23	10.34	673.89	10.00	674.23	10.76	673.47	<i>destroyed</i>	
MW-1	680.05	9.26	670.79	9.05	671.00	9.80	670.25	10.60	669.45
MW-2	684.68	7.44	677.24	6.91	677.77	8.06	676.62	8.77	675.91
MW-3	685.75	8.78	676.97	<i>not measured (2)</i>		9.37	676.38	10.43	675.32
MW-3D	686.29	<i>not constructed</i>		9.69	676.60	10.57	675.72	11.68	674.61
MW-4	683.94	7.50	676.44	7.05	676.89	8.20	675.74	8.87	675.07
MW-4D	683.91	<i>not constructed</i>		8.46	675.45	9.51	674.40	10.43	673.48
MW-6	682.64	11.17	671.47	11.07	671.57	11.87	670.77	13.21	669.43
MW-6D	682.82	<i>not constructed</i>		11.52	671.30	12.29	670.53	13.30	669.52
MW-7	670.53	<i>not constructed</i>		3.91	666.62	4.77	665.76	<i>destroyed</i>	
MW-8	670.60	<i>not constructed</i>		5.26	665.34	5.86	664.74	6.87	663.73
MW-9	669.43	<i>not constructed</i>		<i>not constructed</i>		4.69	664.74	5.60	663.83
MW-9D	669.34	<i>not constructed</i>		<i>not constructed</i>		5.12	664.22	6.04	663.30
MW-10	666.91	<i>not constructed</i>		2.15	664.76	2.66	664.25	3.28	663.63
MW-11	667.23	<i>not constructed</i>		1.51	665.72	1.96	665.27	2.36	664.87
MW-12	670.05	<i>not constructed</i>		4.08	665.97	4.35	665.70	4.48	665.57
MW-13	664.03	<i>not constructed</i>		5.61	658.42	5.70	658.33	6.04	657.99
PZ-01	687.75	2.68	685.07	1.92	685.83	4.32	683.43	<i>destroyed</i>	
PZ-02	<i>not measured (4)</i>	<i>not constructed</i>		2.14	<i>not available (4)</i>	<i>destroyed</i>		<i>destroyed</i>	
PZ-03	678.20	2.83	675.37	2.59	675.61	3.58	674.62	<i>destroyed</i>	
PZ-04	664.06	2.97	661.09	2.44	661.62	3.40	660.66	<i>destroyed</i>	
PZ-05	661.25	2.43	658.82	2.03	659.22	2.73	658.52	<i>destroyed</i>	
PZ-06	654.28	3.28	651.00	2.85	651.43	3.69	650.59	<i>destroyed</i>	
PZ-12	666.95	<i>not constructed</i>		2.52	664.43	2.87	664.08	3.70	663.25
PZ-13	657.20	<i>not constructed</i>		0.98	656.22	1.01	656.19	1.03	656.17
PZ-14	660.69	<i>not constructed</i>		<i>not constructed</i>		2.13	658.56	2.66	658.03

1) Surveyed by Guntlow & Associates, Inc.

2) Not measured due to suspected potential for presence of non-aqueous phase liquid (NAPL).

3) Elevation not available due to change in top-of casing elevation between time of measurement and time of survey.

4) Elevation not available; location destroyed prior to survey.

Well	VGES	EPA-3		EPA-4	EPA-6	EPA-7	EPA-8	EPA-10
Date	µg/L	8/31/2010	4/19/2012	8/31/2010	8/31/2010	8/31/2010	8/31/2010	9/1/2010
Aroclor 1016	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	0.7 J-
Aroclor 1221	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1232	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1242	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1248	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1254	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1260	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Well	VGES	MW-1		MW-2		MW-3 (Groundwater)	MW-3 (NAPL, µg/kg)
Date	µg/L	9/1/2010	4/19/2012	9/1/2010	4/19/2012	9/2/2010	4/19/2012
Aroclor 1016	0.5	0.7 J-	< 0.3	< 0.5	< 0.3	< 1,000	< 20,000
Aroclor 1221	0.5	< 0.5	< 0.3	< 0.5	< 0.3	< 1,000	< 20,000
Aroclor 1232	0.5	< 0.5	< 0.3	< 0.5	< 0.3	14,000	370,000,000
Aroclor 1242	0.5	< 0.5	< 0.3	< 0.5	< 0.3	< 1,000	< 20,000
Aroclor 1248	0.5	< 0.5	< 0.3	< 0.5	< 0.3	< 1,000	< 20,000
Aroclor 1254	0.5	< 0.5	< 0.3	< 0.5	< 0.3	< 1,000	< 20,000
Aroclor 1260	0.5	< 0.5	< 0.3	< 0.5	< 0.3	< 1,000	< 20,000

- 1) Concentrations reported in parts per billion (µg/L) unless otherwise noted.
- 2) PCB analysis performed by EPA Method 8082.
- 3) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)
- 4) J- = Laboratory report indicates that concentration may be underestimated.

Well	VGES	MW-3D				MW-4	
Date	µg/L	9/2/2010	Field Duplicate 9/2/2010	4/19/2012	Field Duplicate 4/19/2012	9/1/2010	4/19/2012
Aroclor 1016	0.5	< 10	< 10	< 0.3	< 0.3	< 0.5	< 0.3
Aroclor 1221	0.5	< 10	< 10	< 0.3	< 0.3	< 0.5	< 0.3
Aroclor 1232	0.5	110	100	280	310	< 0.5	< 0.3
Aroclor 1242	0.5	< 10	< 10	< 0.3	< 0.3	< 0.5	< 0.3
Aroclor 1248	0.5	< 10	< 10	< 0.3	< 0.3	< 0.5	< 0.3
Aroclor 1254	0.5	< 10	< 10	< 0.3	< 0.3	< 0.5	< 0.3
Aroclor 1260	0.5	< 10	< 10	< 0.3	< 0.3	< 0.5	< 0.3

Well	VGES	MW-4D		MW-6			
Date	µg/L	9/2/2010	4/19/2012	9/1/2010	Field Duplicate 9/1/2010	4/19/2012	Field Duplicate 4/19/2012
Aroclor 1016	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.3
Aroclor 1221	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.3
Aroclor 1232	0.5	< 0.5	< 0.3	12	11	43	43
Aroclor 1242	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.3
Aroclor 1248	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.3
Aroclor 1254	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.3
Aroclor 1260	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.3

- 1) Concentrations reported in parts per billion (µg/L) unless otherwise noted.
- 2) PCB analysis performed by EPA Method 8082.
- 3) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)
- 4) J- = Laboratory report indicates that concentration may be underestimated.

Well	VGES	MW-6D		MW-7	MW-8		MW-9	
Date	µg/L	9/1/2010	4/19/2012	8/31/2010	9/1/2010	4/18/2012	9/1/2010	4/18/2012
Aroclor 1016	0.5	< 0.5	5.1 J-	< 0.5	2.3	< 0.3*	5.9 J-	0.8 J-
Aroclor 1221	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1232	0.5	25	< 0.3	< 0.5	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1242	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1248	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1254	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1260	0.5	< 0.5	< 0.3	< 0.5	< 0.5	< 0.3	< 0.5	< 0.3

Well	VGES	MW-9D		MW-10		MW-11	
Date	µg/L	9/1/2010	4/19/2012	8/30/2010	4/18/2012	8/30/2010	4/18/2012
Aroclor 1016	0.5	< 1	11	1.6	0.5 J-	< 0.5	< 0.3
Aroclor 1221	0.5	< 1	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1232	0.5	7	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1242	0.5	< 1	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1248	0.5	< 1	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1254	0.5	< 1	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3
Aroclor 1260	0.5	< 1	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3

- 1) Concentrations reported in parts per billion (µg/L) unless otherwise noted.
2) PCB analysis performed by EPA Method 8082.
3) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)
4) J- = Laboratory report indicates that concentration may be underestimated.
* = Laboratory report indicates presence of Aroclor 1016 below reporting limit.

Well	VGES	MW-12		MW-13		PZ-04	PZ-05	PZ-06
Date	µg/L	8/30/2010	4/19/2012	8/30/2010	4/18/2012	8/31/2010	8/31/2010	8/31/2010
Aroclor 1016	0.5	40	8	< 0.5	< 0.3*	< 0.5	< 0.5	< 0.5
Aroclor 1221	0.5	< 5	< 0.3	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5
Aroclor 1232	0.5	< 5	< 0.3	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5
Aroclor 1242	0.5	< 5	< 0.3	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5
Aroclor 1248	0.5	< 5	< 0.3	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5
Aroclor 1254	0.5	< 5	< 0.3	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5
Aroclor 1260	0.5	< 5	< 0.3	< 0.5	< 0.3	< 0.5	< 0.5	< 0.5

Well	VGES	PZ-12		PZ-13		PZ-14		(b) (6) Pipe
Date	µg/L	4/19/2012	Field Duplicate 4/19/2012	8/30/2010	4/18/2012	8/30/2010	4/18/2012	8/30/2010
Aroclor 1016	0.5	< 0.3	< 0.3	< 0.5	0.4 J-	0.7 J-	0.6 J-	1.7 J-
Aroclor 1221	0.5	< 0.3	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3	< 0.5
Aroclor 1232	0.5	< 0.3	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3	< 0.5
Aroclor 1242	0.5	< 0.3	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3	< 0.5
Aroclor 1248	0.5	< 0.3	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3	< 0.5
Aroclor 1254	0.5	< 0.3	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3	< 0.5
Aroclor 1260	0.5	< 0.3	< 0.3	< 0.5	< 0.3	< 0.5	< 0.3	< 0.5

- 1) Concentrations reported in parts per billion (µg/L) unless otherwise noted.
2) PCB analysis performed by EPA Method 8082.
3) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)
4) J- = Laboratory report indicates that concentration may be underestimated.
* = Laboratory report indicates presence of Aroclor 1016 below reporting limit.

Well	VGES	(b) (6) Well		(b) (6) Well	(b) (6) Well	
Date	µg/L	8/30/2010	4/18/2012	10/29/2010 ⁽⁵⁾	9/20/2010 ⁽⁵⁾	4/18/2012
Aroclor 1016	0.5	1.3 J-	0.6 J-	< 0.3*	1.8 J-	< 0.3*
Aroclor 1221	0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3
Aroclor 1232	0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3
Aroclor 1242	0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3
Aroclor 1248	0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3
Aroclor 1254	0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3
Aroclor 1260	0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3

1) Concentrations reported in parts per billion (µg/L) unless otherwise noted.

2) PCB analysis performed by EPA Method 8082.

3) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)

4) J- = Laboratory report indicates that concentration may be underestimated.

5) Sample collected directly from plumbing within residence.

* = Laboratory report indicates presence of Aroclor 1016 below reporting limit.

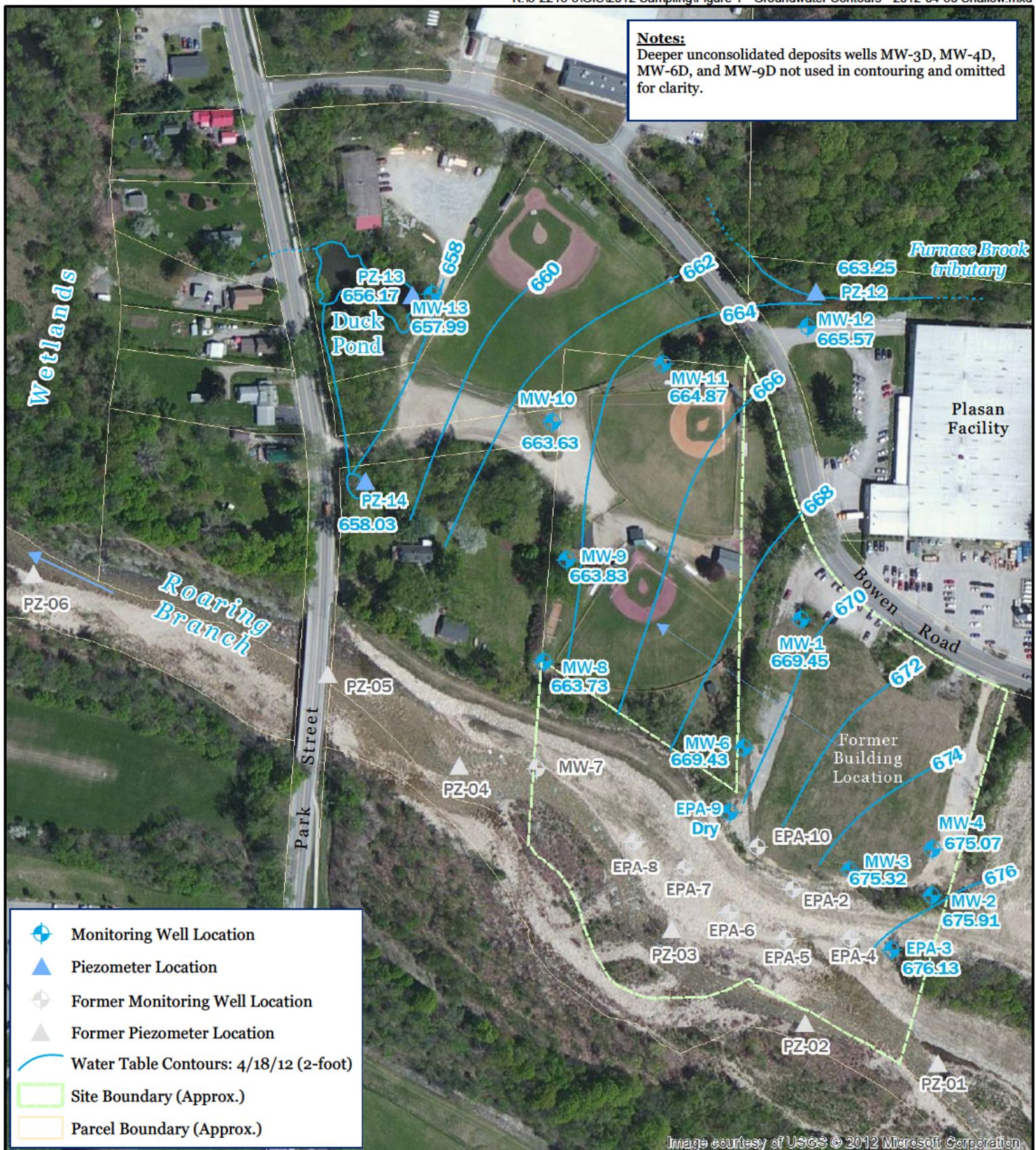


Figure 1: Water Table Potentiometric Map
April 18, 2012

Jard Company Site: Bennington, Vermont

100 State Street, Suite 600
Montpelier, VT 05602



Drawn by: DPB Date: 05/11/12
Reviewed by: J-B Date: 05/14/12

Scale: 1" = 200' Project: 3-2218-5



0 100 200 400
Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
Aerial photography from ArcGIS Online Bing basemap service

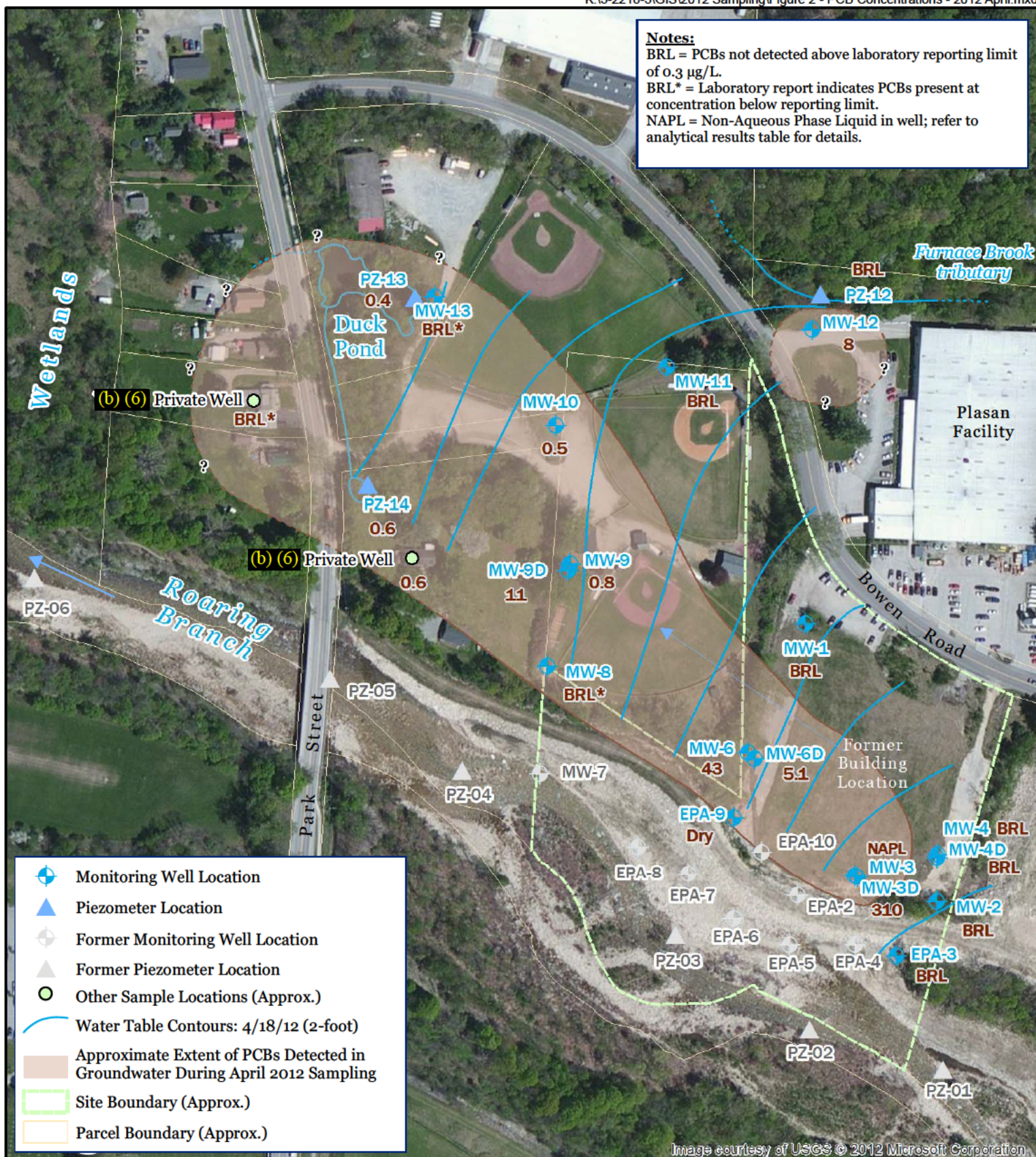


Figure 2: PCB Concentrations in Groundwater (µg/L)
 April 18-19, 2012

Jard Company Site: Bennington, Vermont

100 State Street, Suite 600
 Montpelier, VT 05602



Drawn by: DPB Date: 05/11/12
 Reviewed by: J-B Date: 05/14/12

Scale: 1" = 200' Project: 3-2218-5



0 100 200 400
 Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information.
 Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate.
 Aerial photography from ArcGIS Online Bing basemap service.